**BCI course CSAI Research Project Declaration Form**

Group Name - NeuroNoodle

Members Names - Barto & Dani

**‘Why’ checklist:**

* What is the topic of your study? What kind of BCI will you develop?

**Seizure EEG classification in neonatals**

* Why do you do this research? What is your motivation?

**Develop more accurate algorithms for identifying seizure onset in neonatals**

* What has been done in this area before?

**EEG seizure competition by Harvard (Harmful brain activity classification in adults) provided high accuracy algorithms which could also be tested on neonatal data. Could also use transfer learning and classic machine learning. There have already been some applied to this datsset.**

* How is your study likely to add to our knowledge of this topic?

**Compares state of art classification models on a novel dataset.**

**Test generalizability and adaptability of state of art classification methods, which yielded high performance on adult seizure detection, on neonatal seizure detection.**

* What do you expect to find out by doing your study? Why is your study worth doing?

**Good classification accuracy, possibility of applying transfer learning to new data**

**(Differences of neonatal and adult seizure characteristics)**

* Will you use existing data or gather your own data with an experiment? If you do not know yet, what will you try first?

**Existing data**

[**https://zenodo.org/records/4940267**](https://zenodo.org/records/4940267)

**Main questions:**

* Have you done your literature review? What is the most interesting literature you found?
* Paper:

<https://zenodo.org/records/4940267>

* Paper:

K. Tapani, S. Vanhatalo and N. Stevenson, Time-varying EEG correlations improve automated neonatal seizure detection, International Journal of Neural Systems. 1850030, 2019

* Paper:

A. Temko, E. Thomas, W. Marnane, G. Lightbody and G. Boylan, EEG-based neonatal seizure detection with support vector machines, Clin Neurophysiol, 122(3) (2011) 464–473.

* What is your research question in a nutshell?
* Research question:

**Something like:**

**How does [modern state of art algorithm] compare to [classic ML algorithm] on neonatal seizure classification?**